

A need for better seismic monitoring in Malaysia

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A need arises for a better and more far-sighted seismic monitoring program in Malaysia. The present seismological network

coverage is inadequate. Earthquakes with $M_L < 4$ cannot be located. Thus minor active zones outside the main belts are not indicated. Although Peninsular Malaysia is not situated in a seismic area, it is not immune to shock waves from earthquakes in adjacent regions. Magnitude versus acceleration and attenuation with distance plots should be used at least to define acceleration levels to anchor design response spectra of high rise buildings and expensive structures.

No effort has been made so far to monitor possible induced seismicity by reservoir loading in recent large expensive hydroelectric projects in Malaysia. Artificial loads causing stresses at or near the surface of the earth can engender earthquakes. Adequate monitoring should be made long before, during and after loading is initiated. Induced seismicity at the Manic 3 reservoir in Quebec affords an important case history. Six weeks after the start of filling of the Manic 3 reservoir, a long sequence of induced earthquakes began. The main shock, $m_{pLg} = 4.1$, was preceded by 1 month of foreshock activity and followed by more than 1,000 aftershocks in the next 4 months. After 2 years, the activity still persists. The activity appeared to have been triggered by water percolating through joint systems and along orientated planes. The presence of regional stresses and local inhomogeneities, structural and lithological, are suggested as principal causes, and not the dimensions of the reservoir and the water height.
